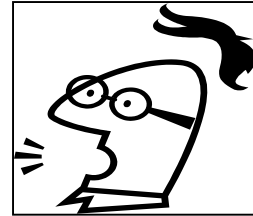


Tips About Public Works Projects for the Purpose of Developing a Capital Facilities Plan

This tip sheet is for anyone who helps develop community Capital Facility Plans or who does Plan Review for development projects.

Examples of What to Tell Your Council About the Importance of the Capital Facilities Plan

- Meets the demands of the public.
- Is a requirement of the Growth Management Act.
- Helps satisfy bond market requirements.
- Shows potential funders that you have a plan.
- Establishes the basis for borrowing.
- Coordinates projects internally and externally.
- Provides orderly replacement of capital assets.
- Encourages efficient government administration.
- Helps AVOID SURPRISES.



Some Examples of Capital Facilities

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|--|----------------------------------|
| • Streets, curbs & sidewalks | • Buildings |
| • Bridges | • Rolling stock (vehicles) |
| • Bikeways & pedestrian paths | • Electric systems |
| • Water systems | • Sewer systems |
| • Stormwater systems | • Airports |
| • Solid waste systems and
recycling centers/transfer stations | • Parks facilities and equipment |
| • Equipment – generators, heating,
ventilation & air conditioning
systems (HVAC) | • Computers |

Determine What Constitutes a Capital Facility (Asset) in Your Community

- Different communities define an assets differently, for example, anything greater than \$5,000, or in some cases \$25,000 in value.
- Useful life of an asset is typically defined as greater than two years or greater than five years.
- Results in fixed asset.



How to Keep Track of Your Capital Facilities

- Small systems – maps, spreadsheets or database applications such as CTED's Capital Facilities Plan Template.
- Larger systems – spreadsheets, database applications, Geographic Information Systems (GIS), specific application software.

Some Questions to Help You Manage Your Assets

Determine whether to include all capital projects in the Urban Growth Area or just those within city limits.

Streets

- Fix the worst first?
- Where are funds best spent?
- Are we on any fixed cycle?
- Is it listed in our six-year street improvement plan?
- Can the access road accommodate the additional weight required with projected development?



Bridges

- Rating index in poor range?
- Will the upgrade improve the rating?
- Schedule improvements with adjacent roadway and bridge projects?
- Schedule to match state funding programs?

Water Systems

- Where are oldest/smallest pipes?
- Where are low-pressure problems?
- Where are complaints?
- Is the Small Water System Management Program or the Water System Plan current (within the past 6 years)?
- Is there a water line replacement program?
- Is there a water meter and hydrant replacement program?
- How are we keeping current with new regulations and deadlines for compliance?
- What will the demand on the water system be with projected development?
- Do the wells produce enough water to serve projected development?



Sewer Systems

- Where are backups occurring?
- How much of pipe is cracked or broken (infiltration)?
- Are roof drains or sump pumps connected to the sewer system (inflow)?
- Root intrusion problems on public and/or private property?
- What needs to be cleaned annually?
- What is the useful life of the lift stations and pump stations?
- Do we deal with sewage lagoons and sludge removal on a regular basis?

- Can our wastewater treatment facility handle the projected loading from new development?

Buildings and Land

- Determine necessary projects?
- Schedule building replacement?
- Appropriate timing for systems upgrades?
- Can maintenance costs be reduced?
- Do you need to purchase land for future use?

Traffic Systems

- When should traffic signals be upgraded?
- Develop sign upgrade schedules to maintain reflectivity and meet standards in the Manual on Uniform Traffic Control Devices?
- What is rate of deterioration?
- Develop pavement-marking program?

Sidewalks


- Where are defects/trip hazards?
- Where are missing segments?
- What is rate of deterioration?
- What funding is needed to keep up?
- Handicapped access?




Lessons Learned From Other Municipalities

- Check with your public works staff and emergency management personnel before you approve a development project that includes narrow cul-de-sacs or bulb-outs to make sure your city snowplow, dump truck or fire truck will be able to maneuver the curve. Also, check with your transportation planners to make sure a cul-de-sac or bulb-out is appropriate for long-term planning.
- Check with your financial or budget staff to make sure all the projects listed in your Capital Facilities Plan can in fact, be funded and by the appropriate funding source.
- Ask your Public Works staff about the life cycle costs of all your facilities and project routine maintenance and replacement costs over the 20-year planning period of your Capital Facilities Plan. Examples of life cycles for public facilities:
 - Pavement is designed to last 15 to 25 years.
 - Curbs are designed to last 25 to 35 years.
 - Bridges are designed to last 35 to 50 years.
 - Water mains can last up to 50 years.
 - Mechanical equipment is designed to last 10 to 15 years.



- Ditches can last forever.
 - Street right of way should last forever.
 - Eliminate excess right of way. Lowers maintenance costs and liability.
 - Life cycle of sewage lagoons depends upon type of system, effluent make-up, climate, etc.
- Estimated development costs can be high. Costs can even go higher due to:
 - Low cost estimates.
 - Having to be oversized for future growth.
 - Designed to meet different needs.
 - Too many cooks involved.
 - More complicated design approval process.
 - Design and field changes also increase costs.
 - Level of public involvement.
 - Land costs.
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- Replacement costs **are even higher** than initial costs due to:
 - Extra cost of demolition of existing facility.
 - Loss of use and disruption of other facilities during replacement.
 - Old facility may constrain the size, access, or use of the new.
 - New, more extensive or expensive standards.
 - Greater user expectations or needs.

On-going maintenance is the biggest cost saver for public facilities. Some examples of where on-going maintenance will increase the life of a public facility include:

- On-going maintenance and lubrication for pumps.
 - Roofs should be inspected and replaced every 5-6 years, if needed.
 - A regular overlay schedule for streets is essential in maintaining the surface integrity.
 - Rolling stock should receive regular maintenance.
- Allocate funds to keep your Public Works (Sewer/Water/Storm Sewer) operator(s) up to date on certifications and salary levels. This will work to your advantage by having a dedicated, well-educated employee who is satisfied with his job and will stay with your community for years to come.
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- Schedule utility replacement projects and street replacement projects as far in advance as possible and alert utility providers regarding the schedule so they can plan for any replacement or repair needs at the same time. This will save money and disruption of public right of way.

Street Tips

- Trying to decide between the cost of asphalt and concrete streets? Here are some tips:
 - Asphalt is oil based – not as environmentally friendly as concrete. 95 percent of asphalt is made of stone, 5 percent oil. Ultra-violet rays have a great impact on asphalt - gets thinner or thicker depending upon weather.
 - Concrete is made of clay, coke, stone, and fly-ash. Water bleeds out of concrete. Control joints will help prevent cracks in concrete.



- Don't skimp on costs of developing a good street base. The base must be smooth and dry. When soil gets wet, it loses strength. If asphalt or concrete is laid over wet soil, the surface material won't last very long (holes will form, alligating, etc.).

- Consider "green streets" or low-impact development practices. Can decrease costs in long and short term.



- Most roads and particularly freeways are designed to last 20 years but can last up to 50-60 years with good maintenance.
- Consider constructing curbs & gutters for larger projects, where possible. They look nice and provide stormwater catchment in urban areas. Use context sensitive design.
- Design traffic load is estimated for ½ the design period. For a 20-year design period the projected Average Daily Trip (ADT) in year 10 is the basis of the design.



- Local road pavement design is based on the weight of garbage trucks. One 80,000 lb. truck can produce as much loading (damage) as 5,000 cars. Don't skimp on pavement thickness to handle the projected number and mix of vehicles.

- Some things you can plan for to maintain your streets:
 - Fill & seal cracks to keep water out of pavement structure.
 - Coat the surface to protect from ultraviolet rays and add friction.
 - Perform spot repairs – holes, trenches, joints.
 - Add thickness to increase strength.
 - Maintain drainage system to provide for quick removal of water from under and adjacent to pavement.
- The high cost of deferred maintenance: Assuming a 16-year life cycle, the quality of an example road declined 40 percent over the first 12 years. Two years later, it dropped another 40 percent. Repairs at year 14 cost five times as much as those at year 12. **Regular maintenance will save four times the cost of street reconstruction.**

- Pavement Management
 - Know what you own.
 - Know its condition, remaining useful life, and maintenance history.
 - Project needs, calculate costs, project budgets and future conditions.
 - Reduce damage by others with a vigilant permit process such as the Pavement Surface Evaluation Rating system (PASER).
- Utility construction/replacement in Streets:
 - Governments own right of way and should require permits for all work in it.
 - There should be standard locations for utilities, i.e., sanitary on center line (CL), water 8' west or north of CL, electric under West or North walk, storm sewer 8' south of CL, etc.
 - Inspect construction by others in ROW to stop buried mistakes and future problems.
 - Manage a utility coordination and planning process to coordinate future activities of all utilities with street work.
 - Street cuts shorten pavement life.
- Sidewalk Considerations
 - Walk widths of residential streets = 4' to 6' (5' average).
 - Along high speed streets walks to be wider or set back from the curb.
 - Commercial area at least 5' clear of obstructions in the walk.
 - Walk should provide safe path for all persons and meet American Disabilities Act (ADA) requirements.
 - Surface should be slightly pitched and provide no-slip surface when wet.



Water System Tips

- Fire flow rates are set by the Insurance Commissioner.
- Engineering firms can provide computer models for determining flow distribution through system.
- Water storage tanks need to be re-painted every 10-15 years. Also need to maintain to prevent corrosion and extend life. Budget about \$50,000 to paint a 250,000-gallon tank.
- Water meters can be fixed, located, tracked by a Global Positioning System (GPS). The signal can show how much water was used, when, any breaks in the system, etc.
- Check with the Department of Health Regional Engineer for assistance with any questions and to confirm that your water system plan is on track. Allow for and in some cases require water conservation (fix leaks, provide incentives to lower water use).



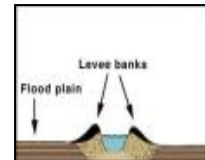
Sewer System Tips

- Consumer education is needed to inform customers that some substances do not break down in the sewage treatment system, such as: antibiotics, caffeine, antidepressants, and birth control pills. These substances should go into the garbage, not into the sewer system.
- Septic systems should be pumped regularly according to your local health department recommendations.
- Clean and inspect sewers a minimum of every 10 years.
- Provide consumer education about FOG traps (fat, oils, greases) and other conservation measures.



Miscellaneous Tips

- There is a federal requirement to inspect bridges every two years. Very important to trucking industry.
- Gatsby 34 (new accounting rules) is very important to all jurisdictions. Includes depreciation methods for infrastructure.
- Floodplain maps published by the Federal Emergency Management Agency (FEMA) are being updated. If you know there are errors or omissions, talk to your local office and get them changed. In New Orleans, they did not account for ocean surges.



Alternative Technologies and Strategies



The following alternative technologies and strategies can be used to reduce stormwater runoff, reduce water usage, and provide for a more sustainable environment. Many of these concepts are being promoted by the U.S. Green Building Council and by the Washington State Department of General Administration as well as by architectural firms and are being implemented in the cities of Seattle, Portland and Vancouver.

- Use alternative surfaces such as: vegetative roofs, pervious pavement or grid pavers, rain gardens and vegetated swales to reduce stormwater runoff and pollutants.

- Use Low Impact Development and Environmentally Sensitive Design to design integrated natural and mechanical treatment systems such as constructed wetlands, vegetated filters and open channels to treat stormwater runoff.
- Install high-efficiency fixtures and dry fixtures such as composting toilet systems and non-water using urinals to reduce wastewater volumes.
- Consider reusing stormwater or greywater for sewage conveyance or on-site wastewater treatment systems (mechanical and/or natural). Options for on-site wastewater treatment include packaged biological nutrient removal systems, constructed wetlands, and high-efficiency filtration systems.
- To limit or eliminate the use of potable water, or other natural surface or subsurface water resources for landscape irrigation, perform a soil/climate analysis to determine appropriate plant material.

Next Steps



1. Put your Capital Facilities Plan Development Team together and assign tasks.
2. Capture data from Water, Sewer, Stormwater, Transportation, School Facility, and Parks and Recreation plans.
3. Identify infrastructure needs outlined in Comprehensive Plan.
4. Capture data from your capital facilities inventory.
5. Examine your land use plan to determine where urban development is planned for over the next 20 years and determine capacity needs.
6. Find out what projects your constituents want funded.
7. Identify any projects that your political leaders want funded.
8. Establish level of service (LOS) standards.
9. Establish project priorities.
10. Look at funding options.
11. Re-evaluate project priorities based on funding availability.
12. Develop Capital budget for the upcoming budget cycle.
13. Develop the six-year Capital Improvement Plan.
14. Develop the 20-year (or more) Capital Facilities Plan.
15. Make sure your public knows and understands why and which capital facility projects were chosen for funding!

Resources



- The State Department of Health or your local health department may be able to help evaluate alternative treatment technologies for water system improvements. www.doh.wa.gov/LHJMap/LHJMap.htm.
- USDA Rural Development grants and loans as well as technical assistance programs for rural utilities, community facilities and housing. Their Web site is located at: www.rurdev.usda.gov/wa/whatwedo.htm.
- The Rural Community Assistance Corporation (RCAC) can help small water and wastewater systems complete rate studies. www.rcac.org/programs/serv-environ.html.
- Evergreen Rural Water of Washington can help to detect pipe leaks for an inflow and infiltration study. www.erwow.org/technicalassistance.htm.
- Contact the Department of Ecology Regional Supervisor or the NPDES Permit Manager for assistance and advice related to stormwater issues as well as ideas for consumer education. www.ecy.wa.gov/programs/wq/stormwater/index.html.
- Consider mutual aid networks for small water systems sharing one certified operator or a group of public works managers jointly purchasing chemicals or renting equipment.
- The Municipal Research and Services Center (MRSC) has a multitude of research, local examples and legal resources on public works issues as well as many other subjects. Go to: www.mrsc.org, click on “subjects” and choose from the menu..
- The Infrastructure Assistance Coordinating Council (IACC) Web site: www.infracfunding.wa.gov includes grant and loan programs and technical assistance resources for water systems, wastewater facilities, stormwater systems, roads, bridges and other infrastructure needs. They also provide technical assistance teams to local jurisdictions with specific capital facility issues. Their yearly conference features a wide variety of funders and programs targeted at infrastructure needs and issues.
- The Department of Community, Trade and Economic Development (CTED) has a Web page featuring good examples of capital facility plans and The Capital Facility Planning Template (www.cted.wa.gov/growth, click on “topics A-H, then capital facilities”). Using the template can result in a complete Capital Facilities Plan.

- For information on sustainable development practices and green building, refer to:
 - The U.S. Green Building Council Web site: www.usgbc.org.
 - The Washington State General Administration Web site:
www.ga.wa.gov/EAS/green/GAprogram.html.
 - The City of Seattle's Sustainability Web site:
www.ci.seattle.wa.us/environment
 - Municipal Research and Services Web site:
www.mrsc.org/Subjects/Planning/GreenBuild.aspx